

What is claimed is:

1        1. A method for generating an output image from a source image, wherein the  
2 colors of the output image are generated from a limited color palette, comprising:  
3                receiving an electronic source image containing a plurality of colors not all of  
4 which can be painted in the output image;  
5                receiving a dithering mask corresponding to the source image, wherein the  
6 dithering mask contains dithering levels specifying the degree to which colors in  
7 corresponding regions of the source image can be dithered to paint the output image; and  
8                generating the output image from the source image by variably dithering the  
9 colors of the output image on a regional basis according to the dithering levels specified in  
10 the received dithering mask.

1        2. The method of claim 1, wherein the received dithering mask is an alpha  
2 channel of the received electronic image.

1        3. The method of claim 1, wherein the dithering mask specifies regional  
2 dithering levels on a per pixel basis.

1        4. The method of claim 1, wherein the output image is a GIF or PNG8 image.

1        5. A method for generating an output image from a source image, wherein the  
2 colors of the output image are generated from a limited color palette, comprising for each  
3 pixel in the output image:  
4                receiving a true color from a corresponding pixel in the source image;  
5                receiving an accumulated color error from a plurality of neighboring pixels;  
6                calculating a target color from the true color and the accumulated color error;

7 finding a paint color in the limited color palette, wherein the paint color is the  
8 color in the limited color palette that is closest to the target color;  
9 painting the pixel with the paint color;  
10 receiving a dithering level from a corresponding pixel in a dithering mask  
11 associated with the source image, wherein the dithering level specifies on a per pixel basis  
12 the amount of the pixel's color error to diffuse to neighboring pixels; and  
13 calculating a color error from the target color, paint color, and dithering level.

1 *Step 5*  
2 6. The method of claim 5, wherein the accumulated color error received by an  
3 output image pixel from a plurality of neighboring pixels represents the accumulated  
4 difference between the target and paint colors used to paint the plurality of neighboring  
pixels that has been diffused to the current pixel by the dithering algorithm.

1 7. The method of claim 5, wherein the step of calculating a color error for each  
2 pixel in the output image comprises using the dithering level received from a corresponding  
3 pixel in the dithering mask to calculate a percentage of the difference between the pixel's  
4 target and paint colors.

1 8. The method of claim 5, wherein the step of calculating a target color for each  
2 pixel in the output image comprises adding the accumulated color error received from a  
3 plurality of neighboring pixels to the true color of a corresponding pixel in the source image.

1 9. A computer program product configured to generate an output image with a  
2 limited color palette from a source image, the computer program product comprising  
3 instructions operable to cause a computer program to:

4 receive an electronic source image containing a plurality of colors not all of  
5 which can be painted in the output image;

6 receive a dithering mask corresponding to the source image, wherein the  
7 dithering mask contains dithering levels specifying the degree to which colors in  
8 corresponding regions of the source image can be dithered to paint the output image; and  
9 generate the output image from the source image by variably dithering the  
10 colors of the output image on a regional basis according to the dithering levels specified in  
11 the received dithering mask.

1 10. A computer program product configured to generate an output image with a  
2 limited color palette from a source image, the computer program product comprising  
3 instructions operable to cause a computer program for each pixel in the output image to :  
4 receive a true color from a corresponding pixel in the source image;  
5 receive an accumulated color error from a plurality of neighboring pixels;  
6 calculate a target color from the true color and the accumulated color error;  
7 find a paint color in the limited color palette, wherein the paint color is the  
8 color in the limited color palette that is closest to the target color;  
9 paint the pixel with the paint color;  
10 receive a dithering level from a corresponding pixel in a dithering mask  
11 associated with the source image, wherein the dithering level specifies on a per pixel basis  
12 the amount of the pixel's color error to diffuse to neighboring pixels; and  
13 calculate a color error from the target color, paint color, and dithering level.

*add a*